PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GB030029	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/GB2004/001384	International filing date *(day/month/year)* 01.04.2004	Priority date *(day/month/year)* 09.04.2003
International Patent Classification (IPC) or national classification and IPC H04L29/08		
Applicant INTERNATIONAL BUSINESS MACHINES CORPORATION et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 6 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
09.02.2005	24.06.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Cankaya, S Telephone No. +49 89 2399-7005

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/001384

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1, 4-9	as originally filed
2, 3	received on 11.02.2005 with letter of 09.02.2005
Claims, Numbers	
1-10	received on 11.02.2005 with letter of 09.02.2005
Drawings, Sheets	
1/4-4/4	as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/001384

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8,10
	No:	Claims	9
Inventive step (IS)	Yes:	Claims	1-8,10
	No:	Claims	9
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:
D1: US2002142780
D2: US2002080721
D3: WO0131945
D4: US2002167960

1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 9 is not new in the sense of Article 33(2) PCT.

2 As far as it can be understood, the subject-matter of claim 9, which has the broadest scope, is not new over the disclosure of document D1, because document D1 discloses (the references in parentheses applying to this document):

A **method** for consolidating log data from a plurality of remote devices to a server over a wireless network and supplying said consolidated log data on demand to a service requester (paragraph 4), said **method** comprising:

building a schedule of transfer periods based on an estimated transfer size for each device (paragraph 10);

receiving an actual transfer size for a device (paragraphs 10, 15);

updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;

transferring data for said device (paragraphs 10, 15, 37; claim 20).

As a consequence, the subject-matter of claim 9 is not new in the sense of Article 33(1) and 33(2) PCT.

3 It appears, that the subject-matter of present independent claim 1 is neither disclosed

nor rendered obvious according to the available prior art documents. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A data logging method for transferring data from a plurality of client devices to a server (paragraph 4), said method comprising:
building a schedule of transfer periods based on an estimated transfer size for each device (paragraph 10);
receiving an actual transfer size for a device (paragraphs 10, 15);
updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;
transferring data for said device (paragraphs 10, 15, 37; claim 20);
estimating a future transfer size for a device (paragraph 17);
calculating a transfer period when the device is scheduled to download its data to the server based on that device's future transfer size estimate and other devices' transfer periods (paragraph 54);
storing the transfer periods and a corresponding device reference in a data structure (paragraph 37, 39; Figure 2);
performing the above steps with respect to each device (paragraph 31).

3.1 The difference between the method set out in claim 1 and that of in D1 is that, according to claim 1

-the future transfer size is an estimate based on a client's historic transfer size.

3.2 The problem to be solved by the present invention may be regarded as how to avoid fluctuations in the estimation of the future data transfer size of a client.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) since document D1 leads to another direction, where the estimation is based on the **current** data transmission queue value of the client (paragraphs 10, 15). It is not suggested or rendered obvious in document D1, that the historic transfer size of a client should be considered while estimating the future transfer size of this client so that long term

data is used to avoid fluctuations in the transfer size estimation.

4 Independent claims 7,8,10, which correspond to claim 1, also meet the requirements of the PCT with respect to novelty (Article 33(2) PCT) and inventive step (Article 33(3) PCT).

5 Documents D2-D4 do not disclose building a schedule of transfer periods based on an estimated transfer size for each device and updating the schedule for each device.

VII Certain defects in the international application

6 The independent claims do not meet the requirements of Rule 6.3(b)(I), (ii) PCT as it is not properly recast in two-part form, with those features disclosed in document D1 being placed in the preamble.

7 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

VIII Certain observations on the international application

8 The application does not meet the requirements of Article 6 PCT.

8.1 The category of claim 9 is not clear, because claim 9 is seeking protection for a service which is not an apparatus or a method (see PG-II, 5.13).

8.2 Claim 10 attempts to define a service requester, which is a device, by the service it requests rather than by the features of the requester itself (see PG-II, 5.37).

8.3 The application comprises multiple independent claims in the same category and therefore does not meet the requirement of conciseness.

8.4 Antecedent definition of "web service" is missing in claim 9.

resource is used for non-ordered requests than for ordered requests. One way to order the downloads is to schedule them to come in at a certain times.

US Patent publication 0028313 discloses a distributed telemetry method and system affected by co-ordinating the taking of readings of a parameter by mobile phone users, the parameter readings being sent to a service system together with location information on the users. It is the task of a query scheduler to, amongst other things, organise when the reading of interest are to be taken. The reading is sent to the service system immediately or triggered by, for example, a scheduled time.

The problem with scheduled remote data logging is that simultaneous and multiple device upload of data can create overload on a server that collects such log data when the download size is different from that scheduled.

SUMMARY OF INVENTIONS

According to a first aspect of the present invention there is provided a data logging method for transferring data from a plurality of client devices to a server as described in claim 1.

According to a second aspect of the present invention there is provided a data logging system for transferring data from a plurality of client devices to a server as described in claim 7.

According to a third aspect of the present invention there is provided a computer program product for transferring data from a plurality of client devices to a server as described in claim 8.

According to a fourth aspect of the present invention there is provided a service for consolidating log data from a plurality of remote devices to a server over a wireless network and supplying said consolidated log data on demand to a service requester as described in claim 9.

According to a fifth aspect of the present invention there is provided a service requestor for receiving consolidated log data from a web service, said web service consolidating said log data from a plurality of remote devices over a wireless network as described in claim 10.

More advantageously the step of updating the schedule comprises: re-calculating the transfer period for the device based on the actual transfer size.

Prefereably the step of updating the schedule further comprises: re-calculating transfer periods of other devices in the schedule if the re-calculated transfer period of said device effects the transfer periods of the other devices.

More preferably, if the originally calculated transfer period differs from the re-calculated transfer period, one or more subsequent transfers may be re-scheduled.

More suitably the future transfer size is acquired from the client based on the present size of the log data.

Advantageously the future transfer size is an estimate based on the client's historic transfer size and the present size of the log data.

DESCRIPTION OF DRAWINGS

In order to promote a fuller understanding of this and other aspects of the present invention, an embodiment of the invention will now be described, by means of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic diagram of the present embodiment of the invention;

Figure 2 is a schematic diagram of a profile data structure stored by the present embodiment of the invention;

Figure 3 is a schematic diagram of a plan data structure stored by the present embodiment of the invention;

CLAIMS

1. A data logging method for transferring data from a plurality of client devices to a server, said method comprising:

building a schedule of transfer periods based on an estimated transfer size for each device;

receiving an actual transfer size for a device;

updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;

transferring data for said device;

estimating a future transfer size for a device;

calculating a transfer period when the device is scheduled to download its data to the server based on that device's future transfer size estimate and other devices' transfer periods;

storing the transfer periods and a corresponding device reference in a data structure;

performing the above steps with respect to each device; and

wherein the future transfer size is an estimate based on a client's historic transfer size.

2. A method as in claim 1 wherein the step of updating the schedule comprises re-calculating the transfer period for the device based on the actual transfer size.

3. A method as in claim 1 or 2 wherein the step of updating the schedule further comprises: re-calculating transfer periods of other devices in the schedule if the re-calculated transfer period of said device effects the transfer periods of the other devices.

4. A method as in claim 1, 2, or 3 wherein, if the originally calculated transfer period differs from the re-calculated transfer period, one or more subsequent transfers are re-scheduled.

5. A method as in any of claims 1 to 4 wherein the future transfer size is acquired from the client based on the present size of the log data.

6. A method as in any of claims 1 to 5 wherein the future transfer size is an estimate based on the client's historic transfer size and the present size of the log data.

7. A data logging system for transferring data from a plurality of client devices to a server, said system comprising:

means for building a schedule of transfer periods based on an estimated transfer size for each device;

means for receiving an actual transfer size for a device;

means for updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;

means for transferring data for said device;

means for estimating a future transfer size for a device;

means for calculating a transfer period when the device is scheduled to download its data to the server based on that device's future transfer size estimate and other devices' transfer periods;

means for storing the transfer periods and a corresponding device reference in a data structure;

means for performing the above steps with respect to each device; and.

wherein the future transfer size is an estimate based on a client's historic transfer size.

8. A computer program product for transferring data from a plurality of client devices to a server, said computer program product comprising computer program instructions stored on a computer-readable storage medium for, when loaded into a computer and executed, causing a computer to carry out the steps of:

building a schedule of transfer periods based on an estimated transfer size for each device;

receiving an actual transfer size for a device;

updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;

transferring data for said device;

estimating a future transfer size for a device;

calculating a transfer period when the device is scheduled to download its data to the server based on that device's future transfer size estimate and other devices' transfer periods;

storing the transfer periods and a corresponding device reference in a data structure;

performing the above steps with respect to each device; and.

wherein the future transfer size is an estimate based on a client's historic transfer size.

9. A service for consolidating log data from a plurality of remote devices to a server over a wireless network and supplying said consolidated log data on demand to a service requester, said web service performing a method comprising the steps of:

building a schedule of transfer periods based on an estimated transfer size for each device;

receiving an actual transfer size for a device;

updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device; and

transferring data for said device.

10. A service requestor for receiving consolidated log data from a web service, said web service consolidating said log data from a plurality of remote devices over a wireless network, said web service performing a method comprising the steps of:

building a schedule of transfer periods based on an estimated transfer size for each device;

receiving an actual transfer size for a device;

updating the schedule for all devices with respect to the difference in the received actual transfer size and the corresponding estimated transfer size for said device;

transferring data for said device; and

estimating a future transfer size for a device;

calculating a transfer period when the device is scheduled to download its data to the server based on that device's future transfer size estimate and other devices' transfer periods;

storing the transfer periods and a corresponding device reference in a data structure;

performing the above steps with respect to each device; and.

wherein the future transfer size is an estimate based on a client's historic transfer size.